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# Psychological Bulletin

EDITED BY

SHEPHERD I. FRANZ, GOVT. HOSP. FOR INSANE  
HOWARD C. WARREN, PRINCETON UNIVERSITY (*Review*)

JOHN B. WATSON, JOHNS HOPKINS UNIVERSITY (*J. of Exp. Psych.*)

JAMES R. ANGELL, UNIVERSITY OF CHICAGO (*Monographs*) AND  
MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)

WITH THE CO-OPERATION OF

B. T. BALDWIN, UNIVERSITY OF IOWA; E. B. HOLT, HARVARD UNIVERSITY; W. S.  
HUNTER, UNIVERSITY OF KANSAS; J. H. LEUBA, BRYN MAWR COLLEGE; MAX MEYER,  
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WHIPPLE, UNIVERSITY OF ILLINOIS; R. S. WOODWORTH, COLUMBIA UNIVERSITY.

## ASSOCIATION NUMBER

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MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)

WITH THE CO-OPERATION OF  
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Vol. 16, No. 2.

February, 1919

THE  
**PSYCHOLOGICAL BULLETIN**

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PROCEEDINGS OF THE TWENTY-SEVENTH ANNUAL  
MEETING OF THE AMERICAN PSYCHOLOGICAL  
ASSOCIATION, BALTIMORE, DECEMBER 27  
AND 28, 1918

REPORT OF THE SECRETARY, H. S. LANGFELD, HARVARD  
UNIVERSITY

The twenty-seventh annual meeting of the American Psychological Association was held in affiliation with the American Association for the Advancement of Science, at Johns Hopkins University, on Friday and Saturday, December 27 and 28, 1918. Although a number of members were unable to attend, having made other arrangements when the first notice announcing the postponement of the meeting reached them, the meeting was very well attended, especially by the men in service. At most of the sessions there were about ninety in the audience.

Owing to the short time at the disposal of the Program Committee, it was deemed advisable to have a brief program covering two days. There were, however, twenty-six papers announced for three sessions, and all but four of them were read at the meeting, so that there was very little time left for discussion. With one exception, all of the papers were upon war problems. The sessions were held in Gilman Hall.

On Friday morning, there was the regular program of the Association; Friday afternoon there was a joint session with Sections H and L of the A. A. A. S.; at 4:30 p. m. Mr. Thorndike, as retiring Vice-President of Section H, delivered an address on "Scientific Personnel Work in the Army," which was followed by Mr. Buchner, as retiring Vice-President of Section L, with an address on "Scientific Contributions of the Educational Survey."

Saturday morning there was another joint session with Section H; Saturday afternoon there was a symposium upon "The Future of Pure and Applied Psychology." The leaders in the discussion were Major Yerkes, President Hall, and Mr. Thorndike. Major Yerkes stated that he thought certain educational institutions should specialize in applied psychology and that the others should continue with general instruction and should engage in applied work only in so far as it furthered such instruction. Mr. Thorndike said that he believed that in twenty years there would be as many "doing" as teaching psychology, but that both groups must be scientific. He saw no reason why the Ph.D. in psychology should not represent both types. President Hall stated it was his belief that psychology must remain a science, but that there was such a thing as at its being too pure. We should keep the science pure, but not so pure as to get our feet off the earth and thus not be able to help mankind. Our motto should be "service" in the best sense. The members then discussed the relation of psychology to the National Research Council and voted to recommend the following: That there be in the National Research Council a division of the sciences of man, such as psychology, medicine, anthropology, sociology, and education.

The annual dinner was held at the Southern Hotel, and was followed by the business meeting and smoker. About seventy members and guests took part.

The President, Mr. J. W. Baird, was not able to preside at the meeting, owing to illness.

Excellent provision for the comfort and entertainment of the members and for the two days' sessions at the University, was made by Mr. John B. Watson, the local member of the Executive Committee.

#### TRANSACTIONS AT THE ANNUAL BUSINESS MEETING

The annual business meeting was held at 8:00 p. m. on December 27, at the Southern Hotel.

It was voted to appoint Mr. Thorndike chairman of the meeting in the absence of President Baird. Toward the end of the meeting Mr. Thorndike withdrew in favor of the new President, Colonel Scott.

It was voted that the minutes of the previous meeting be accepted as printed.

The following items of business reported by the Council were then acted upon:

I. The Secretary reported the deaths of the following members of the Association during the past year: Harry Kirke Wolfe, July 30, 1918, aged 60; and James Jackson Putnam, November 4, 1918, aged 73.

II. The Treasurer's report as printed below was read and accepted. The following budget prepared by the Council was also read and adopted:

ESTIMATE OF RESOURCES

On deposit.....	\$236.48
Dues.....	330.00
Interest.....	50.00
Sale of monographs.....	?
Withdrawal from principal funds.....	<u>400.00</u> \$1,016.48

ESTIMATE OF EXPENDITURES

Printing and supplies.....	\$275.00
Postage.....	100.00
Reprints.....	75.00
Abstracts.....	50.00
Incidentals of meeting.....	25.00
Apparatus exhibition.....	25.00
Election committee.....	50.00
Secretary's stipend.....	250.00
Other committees.....	
Outstanding accounts.....	<u>64.11</u> \$914.11

III. It was voted to authorize the secretary to withdraw the \$400.00 from the principal funds of the Association.

IV. It was voted to postpone until the following year the matter of the increase of the annual dues to \$2.00.

V. It was voted that the time and place of the next annual meeting and the appointment of the local member of the Executive Committee be left to the Council with power.

VI. Mr. Buchner moved that J. E. W. Wallin be appointed the representative on the Council of the A. A. A. S. The motion was carried.

VII. The secretary reported the following nominations for membership in the Association, and was instructed to cast the ballot of the Association for their election: Edith Mulhall Achilles, Ph.D., instructor in extension teaching, Columbia University; Ada Hart Arlitt, Ph.D., associate in education, Bryn Mawr College; Robert

Chenault Givler, Ph.D., instructor in psychology, Harvard University; Samuel C. Kohs, Ph.D., assistant professor of psychology, Reed College, Portland, Oregon; Florence Mateer, Ph.D., psycho-clinician, Bureau of Juvenile Research, Columbus, Ohio; Mark Arthur May, Ph.D., assistant in religious education, Union Theological Seminary, New York City; George Haines Mount, Ph.D., professor of psychology, Cedar Falls, Iowa; Constantine Frithiof Malmberg, Ph.D., vocational advisor, Board for Vocational Education, Pittsburgh, Pa.; Harry H. Wylie, Ph.D., professor of psychology, Geneva College, Beaver Falls, Pa.

VIII. The members of the program committee for the ensuing year were announced as follows: Messrs. Angier, Baird, and the secretary.

IX. In view of the fact that the nomination and election ballots were sent to the members after the date fixed by the constitution, it was moved to legitimatize the election of the President and two members of the Council. The motion was carried.

X. It was voted that when the Association met with the A.A.A.S., only the address of the retiring Vice-President of Section H should be arranged by the secretary of that section, the make-up of the joint session being left to the Secretary of the Association.

The Chairman then called for the reports of committees. Major Yerkes, Chairman of the Committee on Election of Officers, reported the results of the ballot of the Association to be as follows: for President, Colonel Walter Dill Scott, of Carnegie Institute of Technology; for members of the Council, elected for three years, in succession to Messrs. Bingham and Dunlap, Messrs. Baldwin and Terman.

Major Haggerty submitted a brief report of the Committee on Qualifications for Psychological Examiners and Other Psychological Experts. It was voted that the Council be authorized to withdraw from the principal funds, at its discretion, a sum not to exceed \$150 to pay for the printing of the complete report of this Committee.

The Chairmen of the other committees reported that owing to the war work, no progress had been made. It was voted to continue the various existing committees.

New business: It was moved to express the regret of the members at the absence of President Baird, and to extend their best wishes for a speedy recovery. There was a unanimous rising when Mr. Bingham moved to express the thanks of the members to Messrs. Watson and Dunlap and the Johns Hopkins University

for their kind hospitality. This motion was carried unanimously. The meeting then adjourned.

## REPORT OF THE TREASURER FOR THE YEAR 1918

## DR.

To balance from previous year.....	\$2,366.92
Dues received from members.....	348.40
Interest from July 1, 1917 to July 1, 1918.....	74.14
Sale of Monographs Nos. 51 and 53 year ending December 31, 1917 .....	11.60 \$2,801.06

## CR.

By Printing and supplies.....	\$123.40
Postage .....	51.08
Express .....	6.75
Telegrams .....	6.36
Reprints of Proceedings .....	16.93
Reprints of President's address.....	10.48
Incidental expenses of 1917 meeting.....	25.00
Printing of abstracts 1917 meeting.....	10.35
Secretary's stipend.....	250.00
Exchange on checks.....	.10
Council's Expenses to extra meeting, April 21, 1917.....	61.00
President's war expenses April 10, 1917 to August 14, 1917.....	391.05
Secretary's expenses for annual meeting.....	40.00 \$ 992.50
Balance in Fifth Avenue Bank.....	235.48
Balance in Union Dime Savings Bank.....	1,573.08 1,808.56
	\$2,801.06

## ASSETS

Cash on hand and in bank.....	\$1,808.56
Dues receivable.....	40.00
Monographs No. 51 and No. 53.....	178.20 \$2,026.76

## LIABILITIES

Outstanding accounts (Bills payable).....	64.11
Appropriations for committee work.....	00.00 64.11
BALANCE.....	\$1,962.65

H. S. LANGFELD,

*Treasurer*

Audited by the Council

CAMBRIDGE, MASSACHUSETTS,  
December 23, 1918

## TITLES AND ABSTRACTS OF PAPERS

*Psychological Service in Army Camps.* GEORGE F. ARPS, Ohio State University.

To meet immediately the national emergency hundreds of thousands of young men from practically every known occupation poured into the various army cantonments like a stream of immense volume, there to be speedily organized into the various army units. The multitude assembled, the concrete problem of whipping and shaping this huge mass into an effective fighting machine in a few months confronted American genius.

Obviously the reduction of this mass of men, representing the entire gamut of social divergencies, into a disciplined fighting machine was the job for an intelligent commissioned and non-commissioned personnel. These men were needed in tens of thousands and never in the history of the Republic was the need more urgent.

How to select the most intelligent, how to select them quickly and with the minimum of error, was the immediate pressing problem. Upon the commissioned men and especially upon the non-commissioned officers fell not only the problem of reducing this conglomerate, inarticulate aggregation of independent American young men into an army of disciplined soldiers, but upon these officers fell the all-important work of developing military morale, stamina, grit, and like qualities.

Each of the psychological examining stations classified the above mentioned aggregation of men into eight or nine grades of intelligence. These grades were then made available as one factor in the selection of officers, rejection of men from the line, discharge of men and in many other ways which can not be detailed here.

The variety of service rendered by the Psychological Board at Camp Sherman, Chillicothe, Ohio, is fairly representative of this type of service in all other Army Camps. This service consisted essentially in examining the following military, semi-military and extra-military organizations.

I. *All Recruits entering Depots.* All commanding officers were furnished with an intelligence rating of every recruit as soon as possible after his induction into the service. These ratings were then entered on the service records and could be consulted by the proper military authorities whenever it was desirable to learn something of the general intelligence of a soldier. This eliminated

what one officer characterized as the "guess method" which necessarily prevailed because of the limited opportunity of getting acquainted with the men and observing them. This officer remarked that he was glad to give up "trying to estimate intelligence by observing 'anatomical topography' and various other phrenological marks of intelligence."

II. *Commissioned Officers of all Organizations.*

III. *Development Battalion Schools.* A complete plan of organization and pedagogical procedure was put into effect by memorandum. The teachers were selected on the basis of intelligence rating and the men attending these schools were initially classified on the same basis.

IV. *Individual Examining.* The psychologist assisted the psychiatrist in eliminating from the line the low-grade men whom it would be dangerous to retain in any line organization. The hopelessly low grade were discharged; the just usable and those somewhat better were transferred to service organizations while the more or less doubtful class was assigned to development battalions.

V. *The camp base hospital and other hospitals forming for immediate overseas duty.*

VI. *Medical department of the depot brigade.*

VII. *Members of the army nurse corps.*

VIII. *Student nurse corps.*

IX. *War prisoners.*

X. *Drug addicts.*

XI. *Conscientious objectors.* A fairly complete intelligence and sociological report was returned to the Commanding Officer of the Camp of Conscientious Objectors on each recruit who classified himself as conscientiously opposed to the military service.

XII. *Candidates for officers' training schools.* All candidates for the (1) Infantry School of Officers, (2) Machine Gun School, (3) Artillery School, (4) Quartermaster Schools, and (5) Signal Schools were given the Psychological Tests and the ratings used in determining entrance to these various schools.

XIII. *Members of the fourth officers' training school.*

XIV. *Personnel of the camp adjutant's office.*

XV. *Personnel of the camp surgeon's office.*

XVI. *Prostitute women.*

XVII. *Y. M. C. A. organization.*

XVIII. *Knights of Columbus.*

*XIX. Jewish Welfare Board.*

*XX. German war prisoners.* The various lines of work, barely indicated above, cover, in a general way, the psychological service in Army Camps.

*The Function of Psychology in the Rehabilitation of the Disabled Soldier.* B. T. BALDWIN, University of Iowa.

This paper was accompanied by 28 lantern slides, demonstrating the aim, scope, and methods of the psychological service in the Walter Reed General Hospital, with particular reference to the remedial aspects of Occupational Therapy on partially ankylosed joints, with emphasis on the value of psychology in determining the range and strength of limited, voluntary movement, through the use of special, adapted apparatus and progress curves.

The patient's attention is repeatedly called to the specific remedial movements involved in the various types of shop work, and at the same time, the movements are initiated by the patient as an integral and necessary part of a larger and more complex series of coöordinated movements. The purposive nature of the movements and the end product of the work offer direct incentives for sustained effort. The periodic measurement in increase of range and strength of movements gives the patient a concrete method of watching his progress from day to day, and frequent comparisons between his progress curves and those of others, afford opportunity for explanation in helping him to overcome plateau periods or regressions which necessarily must occur; this consequently evokes an attitude of interest, cheerfulness, and optimism in the patient.

An analysis of movements involving different types of work was given, and a classified summary of the types of therapeutic activities which involve the voluntary flexion, extension, abduction, adduction, supination, pronation, circumduction, rotation of the various joints of the body.

To this institution belongs the distinction of being the first general army or reconstruction hospital in the United States to have a trained psychologist on its official staff.

*Army Personnel Work.* W. V. BINGHAM, Carnegie Institute of Technology.

A brief sketch is presented of the Army system for getting the right man in the right place. This system as installed and super-

vised by the Committee on Classification of Personnel was employed in the classification and placement of three and a half million soldiers. Its essential features include a qualification record card for every man, which gives instantly his occupation, trade skill, previous experience, former employer, nativity, citizenship, schooling, linguistic ability, mental capacity, physical capacity, leadership ability, military experience, and kind of service preferred; an index of about seven hundred civilian occupations called for in the personnel of our military establishment; a manual of trade specifications, or definitions of duties and qualifications of workers in these occupations; tables of occupational needs for all the various kinds of army units; personnel specifications for several hundred sorts of army officers, indicating for each the duties to be performed, the general and technical qualifications required, and the limits of age, physique, schooling, occupational experience and degree of leadership ability called for; similar but more concise definitions of duties and personnel specifications for all the grades of enlisted men in each of four hundred sorts of army organizations; a system of standardized trade tests, to aid in determining with more accuracy than by the most careful interview, what degree of skill a tradesman actually possesses; reports of inventories of available personnel in camps, divisions and new draft increments; personnel requisition forms; a procedure for consolidating demands for skilled personnel throughout the entire army and apportioning them against the available supply; a routine for locating quickly the individual soldiers or officers needed, and effecting their transfer; a uniform method of rating officers as an aid in making promotions, demotions, and assignments; a system of supervision and inspection of the work of camp personnel organizations in interviewing, trade testing and classifying recruits, in filling requisitions, in making assignments, and in so balancing the personnel of units as to expedite training by insuring an optimal distribution of intelligence and skill. Many of the features of this army personnel system, as for example the concept of personnel specifications, are suggestive for industrial and educational practice. Samples of these Army specifications or definitions of duties and qualifications are presented in the paper which will appear in full in the *Journal of Applied Psychology*.

*The Relation of Intelligence to Occupation as Indicated by Army Data.* J. W. BRIDGES, Ohio State University.

The data for this paper were obtained by psychological examiners from the *soldier's* qualification cards (c.c.p. 1). Distributions of scores for *alpha* (literate), and for *beta* (illiterate) cases were secured for each occupation, and for each degree of skill, viz., apprentice, journeyman, and expert. For the most part this classification of skill was based upon a personal interview; but some results in which it was based upon *trade tests* were also obtained. In the former case the distinction proved unreliable; and, as no difference in intelligence was found in a few sample cases, the data on these three degrees of skill were combined to obtain rough occupational standards of intelligence.

A comparison of the occupations was made by obtaining a percentage distribution of letter grades for each, and then arranging them in the order of the proportion of A plus B grades. In this way the results with the two scales could be combined with the least inaccuracy, since the letter grades are practically equivalent. A comparison of median alpha scores would be misleading; for omission of beta cases (illiterates), which vary from no per cent. in professional and clerical occupations to over thirty per cent. in unskilled labor, would greatly minimize the differences in intelligence. A chart was exhibited to illustrate results for twenty occupations. The order is shown to be roughly: professions, clerical occupations, trades, partly skilled labor, and unskilled labor. The greatest differences are at the upper end of the scale, while the differences within the group of trades are comparatively small. Differences in range of intelligence are also marked and probably significant. The range becomes less as we go up the scale.

Charts were exhibited showing the difference between recruits who passed certain trade tests as apprentices or better and those who were not trade tested at all. Those who passed are uniformly superior in intelligence, and the proportion of beta men (illiterates) is, with one exception among those studied, always less. The exception is heavy truck drivers (23) for which the trade test is wholly performance.

Charts were also exhibited showing the relation between the intelligence of apprentices, journeymen and experts in four different occupations. A marked correlation between intelligence as measured by the army group tests and skill as measured by the trade tests is evidenced. The Pearson coefficients of mean square

contingency were determined for eight trades. These vary from .67 in the case of horse hostlers to .13 for truck drivers.

Cautions to be observed:

- (1) The trade specifications of the Committee on Classification of the Personnel has proved invaluable in this study; and in all future work on occupation a careful definition of the trade will be a first essential.
- (2) There is danger in inferring from the intelligence standard of an occupation as indicated by the data obtained from recruits, its correct standard in civil life because of: (a) draft-board selection operating more in some occupations than in others, (b) greater selection of officers from some occupations than others, (c) the sex factor—no female representatives of the trade among recruits, (d) the age factor—recruits are young men many of whom are engaged in temporary occupations or have not yet found their industrial level.

*A Program of Mental Engineering.* RAYMOND DODGE, Wesleyan University.

Every organic reaction may be analyzed into factors that are accidental or ephemeral, factors that are permanent or general, and factors that are prophetic. If we psychologists would evaluate our own reactions to the great war stimulus we must make some similar analysis. While we are justly proud of our contributions to the common cause, it may be that we are thinking too much these days of what we have done and too little of the new situations that we now face.

There will be a strong inclination to perpetuate our satisfying reactions. We are sure to ask how our war-born techniques may be used in peace. We have a paternal affection for the nice instruments that we have created and we naturally ask what new uses they may find now that their war uses are over. Psychologically this is a disastrous mistake for any organism. Our real service depended not on ready-to-use methods but on our unique ability to estimate the new human and mental situations that confronted the war machine. We analyzed those problems and developed workable reactions often before the professionals knew that the problems existed. Our success was due to our ability to analyze the situations, to pool our resources, and to find expert help where our resources stopped. These are the factors of our reactions that deserve perpetuation, and give promise for the future.

Our present business is to forget our reactions to war, to analyze the new situations of peace, to pool our resources once again, and to seek the help of experts. In particular it is obvious to most of us that this war has enormously depressed some of the great cohesive forces of society. At least one of our great new tasks is to pool our intellectual resources with the historian, the sociologists, with the real leaders of capital and labor for the discovery and systematic exploitation of all the social factors that make for a stable social equilibrium.

Let us admit that the task is gigantic. But let us not forget that in the last two years scientific men have grown enormously in the capacity to coöperate, in self-confidence, and in the confidence of the community. The new tasks are no larger proportionately than the war tasks were. They are equally insistent, and vastly more enduring. To be successful this new organization of our intellectual resources must start with the ability to command the services of the best minds of the country, and to put across any plans of propaganda that it decides to be necessary. In a task of this magnitude we cannot afford to start as a piker. The course of events has put America under bonds to find and develop the social and mental factors that make for a stable social equilibrium. It is peculiarly the job of American psychology. Any necessary expense however vast is a mere bagatelle in comparison with the importance of the task.

*Psychological Investigations in Aviation.* KNIGHT DUNLAP, Johns Hopkins University.

This paper has appeared in *Science* for January 24, 1919.

*Results and Values of Psychological Examining in the United States Army.* MABEL R. FERNALD, Washington, D. C.

From the beginning of psychological examining in the United States Army up to the present week, examinations have been given to 1,679,713 enlisted men and 41,623 officers. Of the enlisted men 0.5 per cent. have been recommended by the psychologists for rejection or discharge, and 1.2 per cent. for service organizations or development battalions.

Numerous lines of evidence are available indicating the importance for the military situation of prompt recognition of low-grade cases. For example, the percentages of men ranking below the average in the psychological examinations is notably large among

such groups as the following: disciplinary cases, men having difficulties in drill, men reported as "unteachable," and men designated by their officers as among the poorest from the point of view of military usefulness.

Comparison of negro troops with white has shown a markedly inferior mental rating for the former, whatever basis of comparison has been used. A further difference based on geographical classification has also been noted, Northern negroes appearing as superior mentally to Southern groups. The full significance of the data on negroes offers an interesting problem for further investigation.

Comparison of various army groups, distinguished from one another on the basis of actual attainment in the service, shows that the psychological tests discriminate between these groups with great definiteness. This point may be illustrated by reference to the percentages of men making A and B grades in Examination Alpha, among representative groups such as the following: officers—83.0 per cent., O.T.S. candidates—73.2 per cent., sergeants—53.4 per cent., corporals—39.7 per cent., literate privates—18.8 per cent. Comparison of measures of central tendency shows equally striking differences. Within the officer group significant differences have also been noted between officers of different branches of the service.

Increasing use has been made of the psychological examinations as an aid in selection of men for admission to Officers' Training Schools, Non-Commissioned Officers' Schools, and other work requiring special ability. It has been shown that the data obtained from psychological examinations can be used to decrease the necessity of elimination and thus increase the efficiency of the schools.

Another important direction of usefulness has been coöperation with personnel officers in using the results of psychological examinations in connection with balancing of organizations and assignment of men to various branches in accordance with specific needs.

The above summary obviously offers merely a suggestion of certain main lines of activity and types of results. The task of making results of examining effective in meeting military needs has been regarded as the one task to be accomplished during the war, and opportunities for usefulness have varied widely from camp to camp.

*The Speed of Adjustment of the Eye for Clear Seeing at Different Distances. A Study of Ocular Functions with Special Reference to Aviation.* G. E. FERREE AND GERTRUDE RAND, Bryn Mawr College.

By speed of adjustment is meant here the speed in the action both of the extrinsic and intrinsic muscles in adjusting for clear seeing at different distances. The amount of lag in this function is found to vary a great deal from individual to individual. In the paper submitted, the time required to change from the adjustment for clear seeing at or near the near-point to that for clear seeing at six meters, and the converse, has been measured in several cases. So far the investigation has been conducted primarily as a study of the method with special reference to its applicability as a test for fitness for vocations for which speed and accuracy of adjustment are a prerequisite. In this particular especially the writers believe the aviator must excel. The rapid development of the science and art of aviation brought about by the late war emphasizes the need for tests which will facilitate the selection of the supernormal eye. It is scarcely to be expected that the conventional acuity tests, designed more particularly for the separation of the subnormal from the normal eye, are fully adequate for this purpose.

The paper contains a description of the apparatus and method used in making the determination and a statement of the results obtained under certain selected conditions. Other types of ocular lag are also considered briefly in passing; and points bearing on the application of the method to the selection of aviators, to the work of the clinic, etc., are discussed.

The apparatus described is now being used in France for the study of the diurnal variations in the aviator's ocular fitness for his work. It is also being used by the Ophthalmological Division at the Medical Research Laboratory at Minneola. Among the problems in prospect there, the following three may be mentioned: (1) the standardization of the test for the selection of aviators, (2) a study of the diurnal variations in the aviator's ocular fitness for his work, and (3) a study of the ocular effects of oxygen poverty.

*Psychology of Morale.* WILLIAM S. FOSTER, Cornell University.

The problem of morale, from the military point of view, is the creation of an eager and settled collective determination to win. Sporadic attempts to solve it are as old as military history. New in this war, however, are full realization of the importance of the

problem, systematic and specialized effort, and full use of the methods of psychology, business and common sense in attacking it.

In October, 1918, for the first time in our history, a specially selected Morale Officer with no other duties, and an assisting organization, was authorized for each camp and division, and a special branch in the General Staff was established to supervise the work and to act as a clearing-house for methods.

As early as March of that year, the present Chief of the Branch called attention to the need of systematic "psychological stimulation of troops" in view of experience in this regard of the European armies, especially those of our enemies and of Italy and France. He further pointed out the importance of such effort in this country on account of our mixed population, our lack of incentive of fighting in direct defense on home soil, and our lesser military traditions and training. In June of the same year and under his direction as Commanding Officer at one of our training camps, the first "system" of morale work was put into effect. It involved a military organization with centralized control of civilian morale agencies, and a modified program for their stay in camp thereafter.

In the beginning, the two officers and some twenty enlisted men forming this organization, were all psychologists. Later, men were chosen on the basis of ability, experience, and personality alone. The primary object of the program was more effectively to reach the individual, so likely to lose sight of primary ends in the confusion of novel conditions and personal experiences, to clarify his purposes, to stimulate his individual determination and weld it into an effective part of the collective national and military determination.

Among the various features of the system, the following may be mentioned: special attention to detail in the methods of reception and military initiation of recruits; the establishment of numerous informational centers; the regular detailing of all men to write letters home, enclosing a letter from the Commanding Officer of the Detention Camp; detailed and simple explanations of military customs, discipline and duties; repeated standard talks on the causes, aims and progress of the war; inspirational addresses by qualified chaplains and others; systematic opportunity for, and training in, singing, athletics and games; the selection of entertainers by test, their assignment to a special company, and their division into balanced troupes, making possible a nightly schedule of vaudeville, boxing, and moving pictures in each section of the camp; intensified publicity for camp and individual activities, the printing and dis-

tribution of special literature and posters; bulletin boards for each company and section, constantly filled and changing; and a complete organization of elementary educational effort.

Adapted to other conditions and with numerous additional special features, similar systems have been in effect in 38 camps since October, and recently the work has extended to hospitals and transports. Since the armistice, the direction of effort has changed, so that at present, beside promoting and maintaining contentment, discipline, and enthusiasm in the men, the machinery of the staff, field and civilian organizations, has been adjusted to the end of sending men back from the Army better citizens, with a better preparation for and better understanding of their opportunities.

*Some Problems of Reeducation.* SHEPHERD IVORY FRANZ, Government Hospital for the Insane.

Cases of cerebral paralyses were considered as examples of the problems of reeducation. In the paralyzed individual whose normal activity has been lost because of a cerebral lesion the first problem is to get the individual to move, and the other problems are those of the acquisition of habits of movement combinations. These problems are much the same in the reeducation of all kinds of individuals; they are problems of habit replacement.

The reeducation of the paralyzed and other individuals was brought forward as an illustration of a factual difficulty confronting the upholders of psycho-physical parallelism or of interaction.

*Some Possible Effects of the War on American Psychology.* G. STANLEY HALL, Clark University.

The following points were brought out:

1. After such a war we tend to revert to first principles, to ask what human nature is and why it is that wars break out and how we must change our civilization to meet the future needs of man.
2. The war has given applied psychology a tremendous impulse. This will, on the whole, do good, for psychology, which is the largest and last of the sciences, must not try to be too pure.
3. The war has brought us face to face with the problems of the feelings. We have learned that the all-dominant emotion is fear, courage being only fear controlled, and cowardice fear yielded to. Our tests must cover the whole life of the soldier, even infancy. We need deeper studies of religious feeling, honor, hate, patriotism, etc.

4. Mass psychology has its chief illustration in the way in which the individual is subordinated to the whole army structure, like a cell in a larger organic unity. Here suggestion may easily become contagion, and the solidarity is so perfect that, we are told, man's consciousness of his kind is the only true and living God, that theology is anthropology, that democracy is theocracy.

5. War has taught us that the range of conscious awareness is limited and that unconscious energies chiefly dominate man's soul, especially in great emergencies. This is illustrated by the shell-shock cases, and is shown also in the adrenalin type of soldier.

6. As we have put more psychology into this war than any other nation, and as we have more laboratories and more men than all others we should henceforth lead the world in psychology. Hitherto we have borrowed from Wundt, Binet-Simon, Paulsen, Lazarus, but now we should take larger views and lead the world. Another motive for doing this is that the war has made democracy dominant in the world, and in that movement we lead. Now democracy rests on education, education is bringing out the power of the human soul, and nature would honor far larger drafts than we have yet made upon it. Hence the future of the world depends in a peculiar sense upon American psychologists.

*Army Trade Tests and their Practical Application.* J. W. HAYES,  
University of Chicago.

The army trade tests were constructed primarily to classify, on the basis of trade skill, the great numbers of men who were taken into the army during 1917 and 1918. The interview method first used, under which was largely accepted the man's own statement as to the variety and degree of trade skill which he possessed was found to be far too untrustworthy for army classification and placement. The army tests were devised to meet the demand for a method of evaluating trade skill which should make possible a high degree of accuracy with a minimum expenditure of examining time and should, moreover, make available as examiners men not possessed of trade skill. The success of the tests in the actual army situations in which they were used was largely dependent on the empirical nature of the standards of trade skill adopted. Each trade was studied in its own industrial environment so as to analyze the essential factors of trade knowledge and skill. The test items formulated on the basis of this study were calibrated by comparison with the performance of actual tradesmen of known degrees of

trade proficiency. The resultant test represented exact trade practice and terminology plus standards of measurement based on actual performance in the trade. By adopting a rigid test procedure it was possible to utilize, as examiners, men who were trained only as examiners and lacked all technical knowledge of the trade in which they were examining. By careful elimination of purely local factors in trade practice and terminology it was possible to insure a high degree of uniformity in the results obtained in widely separated portions of the country.

*Principles Underlying the Classification of Men in the Students Army Training Corps.* TRUMAN L. KELLEY, Teachers College, Columbia University.

The problem of classification in the S. A. T. C. follows directly from its purpose. One of the main purposes in its establishment was to provide for securing material fit for officer training. It was anticipated that from thirty to forty thousand men a year would be selected from S. A. T. C. units for transfer to training in officers' training camps. Not only was it necessary to select these men, but it was desirable to assign them for training to those branches for which they were best fitted and in which they were most needed. Accordingly the scheme for the classification of S. A. T. C. men, drawn up by Dr. Thorndike, attempted to accomplish the following things:

1. Pick specialists.
2. Divide the soldiers into three parts upon the basis of general merit as officer material, the upper part going to officers' training schools, the middle part to non-com schools, and the lowest part to camps, continuing upon the status of privates.
3. To do away with the necessity of each corps conducting a separate recruiting campaign.
4. To reduce to a minimum the tendency to exercise personal bias.
5. To be just to the soldiers, both from the standpoint of their abilities and from that of their interests.
6. To determine scores for each man selected for officer material indicative of his respective degrees of fitness for the different branches of the army.
7. To lead to an allotment of officer material to the different branches which, both in number and quality, would be appropriate to their needs.

The solution to so complex a problem demanded a procedure involving the closest synthesis between the abilities of men, the special needs of different branches of the service, and the numbers required in the branches.

The salient features of the plan adopted involve:

1. A method of elimination from consideration of such men as are not fit for any officer post.
2. A rating of men with respect to possession of certain traits—traits which promise to be important when judged by certain essential criteria.
3. A rating of officer jobs in the different branches of the army with respect to the needs of the branches for men possessing the given traits.
4. A scheme for utilizing these ratings in allotment whereby the men would be best placed and the jobs best filled considering the total supply of available officer material.

It will be noticed that items 3 and 4 are unique contributions to the problem of classification.

*Action of "Antipyretic" Analgesics on the Psychological Reaction Time.* D. I. Macht, S. Isaacs AND J. Greenberg, Johns Hopkins University.

Following the investigations by Macht and Isaacs on the effect of morphin and opium on the reaction time, the present authors undertook the study of the effects on the reaction time of the large class of so-called antipyretic analgesics. The method of investigation was the same as that followed in the opium experiments. Simple and complex reaction times were measured by means of Dunlap's chronoscope. After the normal reaction time had been established, the subjects were given the antipyretic drugs by mouth, and the effect of the drug was judged by repeated readings afterwards. The experiments were performed, for the most part, on the authors themselves and occasionally on other subjects. About forty experiments were made in all; each lasting from two to five or more hours. The drugs employed were quinin, acetanilid, acetphenetidin (phenacetin), antipyrin, phenyl salicylate (salol), acetyl salicylic acid (aspirin), pyramidon and the following combinations: acetanilid and salol, phenacetin and salol, acetanilid and phenacetin, aspirin and salol, and antipyrin and aspirin. The doses of the drugs never exceeded those employed by conservative therapeutists.

The results obtained were quite different from those found in the case of morphin and opium. No primary stage of stimulation or shortened reaction time was noted except possibly after small doses of quinin. It was found that, in all cases, the ordinary doses of antipyretics produced either very little effect on the reaction time, or if affecting it at all, always delayed it as shown by the prolongation of the mean readings or an increase in the mean variations or by both. The most powerful or depressant drug in this respect was pyramidon. It was furthermore very interesting to note that when the antipyretic drugs exerted an influence on the reaction time, the simple reflexes or reaction times for sound, light and touch were more delayed than the more complex association tests. Of the three simple reactions, that for touch was more generally retarded than that for sound or light. The association tests were also somewhat depressed or impaired but usually in a *lesser* degree than the simple reaction tests.

The experiments with combinations of two antipyretics gave results which could be explained by a simple summation of the individual effects of the two components. No so-called "synergism" or potentiation of one drug by the other was found.

*The Official Method of Rating Army Officers.* WALTER DILL SCOTT,  
Carnegie Institute of Technology.

The Rating Scale is one of the coördinated methods employed by the War Department to place "the right man in the right place." These coördinated methods or devices include

- (1) The psychological tests,
- (2) The trade tests,
- (3) Special tests for special aptitude,
- (4) The trade and personnel specifications,
- (5) Tables of occupational needs,
- (6) The classification system, and
- (7) The Rating Scale.

The Rating Scale is one of four rival systems for appointing and promoting officers in the United States Army, *i.e.*,

- (1) Seniority,
- (2) Alphabetical,
- (3) Personal acquaintance,
- (4) Systematic records based on the Rating Scale.

The Rating Scale was introduced into the army experimentally but on a small scale in July, 1917. At the present time it is the

only method in general use in the army and is the official system for recommendation for commission and for promotion of commissioned officers both in the United States and in the American Expeditionary Forces.

There are certain psychological assumptions and theoretical difficulties inherent in the rating scale system which created skepticism on the part of many army officers. However, in actual use the system has been so helpful that it has been extended until its use has become universal in the army both for candidates and for promotion of officers.

*Research on Special Aptitude for Flying.* G. M. STRATTON, University of California.

It is highly desirable that there be a lessened number of those who are admitted to the flying schools and who nevertheless fail to learn to fly.

To this end, there were tried at Rockwell Field in the summer of 1917 tests in the following regions: dexterity; steadiness of standing; power to perceive very gradual tilting of the body; emotional responsiveness; simple reaction to light and sound; and the power of continuing in imagination certain fragments of curves presented visually. The correlation between any particular test and flying ability proved to be small but by the use of a combined score from these tests, the lowest six of the fifty persons tested yielded five who were relieved from instruction because of their poor flying.

In the spring of 1918, these tests were tried again at Rockwell Field, with improved apparatus, on 150 aviators. And there was added a test of the power to discriminate sudden jerks of the body to the right and to the left, and a test of coöordination involving at once the two hands and the two feet. Considered in conjunction with data from Kelly Field, the tests that proved most effective were those on the steadiness of standing, the power to perceive gradual tilting, the power to discern sudden jerks (when combined with visual and auditory reactions), and emotional responsiveness. Again the correlation of any particular test with the ability to fly was found to be small; but again a combined score gave a sufficiently high correlation to warrant the use of certain of these tests in the actual selection of aviators, for hitherto the work had wholly the character of research.

A number of farther tests are at present being studied at Taylor and Southern Fields, to supplement or supplant, if possible, the

tests above described. These tests are in the following regions: judgment of intersecting motions; pursuit movements of the hand; dynamometry; the power to trace and retrace a specified course. It is still too early to state what success will attend these farther tests. But even without them it has been shown that in so exceedingly complex a power as that involved in flying, the usual methods of selecting candidates can profitably be supplemented by special psychological methods.

*Speech Reconstruction in Soldiers.* WALTER B. SWIFT, Cleveland Public Schools.

The war has given a new phase, or has developed what was the coming phase of speech building. Like many other inventions and many a scientific progress, war has hastened us to crystallize our dreamy thoughts into solid forms. The old methods of speech correction were largely directed to the mouth—the education of its parts—in a word, the training up of the external speech mechanism. The war, on the other hand, has shown us that all these external parts may be injured, and too reconstructed in new ways; that the nervous system connecting the external parts of the brain may be injured in new forms; and that the three central brain parts controlling speech in the central nervous system may be in the same old ways and also in markedly new ways, put out of function or destroyed altogether. This situation has demanded a deeper speech reconstructor, a more intimate anatomical knowledge of the external speech mechanism, its minute musculature, and functions, as a more thorough understanding of brain anatomy and the function of brain parts. Speech reconstruction in soldiers or speech construction in soldiers is largely a parallel case to educational and occupational reconstruction. They both deal with minute muscular mechanisms and adjustments, they both have a peripheral nerve anatomy and central nerve functions and psychological activities. Speech building may be considered more intricate, more complex, needing a larger previous training, a much more many-sided training than these other fields.

The psychological sides of speech building consist in testing kinesthetic functions, acoustic functions, and visual activities, and the building up of the speech consists in the functional rehabilitation or reconstruction of these three forms of speech control. This naturally shows how wide the modern problem is, and how incomplete the attempt is where only one of these brain areas is

furnished with a makeshift function—such as lip reading. The lip reading efforts of the war department have been admirable. I think nothing has equalled the speed and efficiency of the results attained at Cape May, but you cannot subordinate the whole speech and all its functions to the ear. That would be to classify a whole under a part. It still remains to be accomplished—a thorough, many-sided approach to speech function, with proper medical specialists and properly trained teachers, for other lines than lip reading.

War speech cases are not going to stop for hospital reconstruction; they have not done so in Canada. They will quickly disperse to their homes all over the country. We are now planning for a widespread meeting of this problem by the education of many teachers stationed in numerous states. The demands are for a wider diagnostic capacity; no mere phonetic training will suffice; no mere mouth treatment will reach all cases. We need the phonetician, medical man and psychologist, all combined in one. We need the expert who can carefully examine and diagnose the speech type—as the psychologists should now be doing in the diagnosis of mental types—and after this scientific investigation, apply vocal and psychological treatment to fit the type.

*Revision of the Definition for Moron.* R. H. SYLVESTER, University of Iowa.

The term moron was coined to label individuals having a Binet mental age of between 8 and 12 years. It has generally been defined in those terms. But early tests of Army recruits indicated that many men testing under 12 years were fit for regular service, and finally S. G. O. orders recognized that some as low as 9 years should not be rejected.

*Mental Age in Years (Stanford-Binet)*

Wages in Dollars per Week	Camp Dodge			Camp Grant		
	8	9	10	8	9	10
11-15.....	4	30	37	4	44	21
16-20.....	2	27	14	9	33	23
21-25.....	1	12	11	6	27	14

This table shows in terms of mental age and weekly wages, 138 low-testing recruits at Camp Dodge and 181 at Camp Grant. The writer made part or all of the examination of each Camp Dodge

case and he believes that not one was a moron. They were sifted from some 1,500 individual white examinees according to specifications which follow, and the 1,500 had in turn been sifted from some 35,000 group examinees. The Camp Grant part of the table shows the corresponding group at that camp. Perhaps several other men should have been included with the 138 and the 181, but these were the only ones within the age and wage limits who were tested under absolutely favorable conditions and whose statements as to wages and social competency were reliable beyond reasonable doubt.

Specifications which each case met were: (1) white; (2) born in United States; (3) native English-speaking; (4) free from symptoms and histories of psychosis, neuroses and feeble-mindedness; (5) successful as farmers, farm hands or laborers; (6) free from records of arrest or of serious trouble; (7) apparently fit for regular military service.

These men were well muscled and healthy; narrow in interests and in knowledge; well oriented as to time, seasons and home environment; proficient in using small but clear vocabularies; and normal emotionally. They were dull and slow but certainly not morons according to Tredgold's or any other definition of feeble-mindedness except those based directly on mental age. The writer is convinced that the definition for moron must be revised so as not to include men of this type and at the same time not to exclude the feeble-minded who score above them in the mental age tests.

*Methods of Testing Intelligence in the United States Army.* LEWIS M. TREMAN, Leland Stanford Jr. University.

The methods used since January, 1918, include a group examination for literate men (Alpha), a group examination for illiterates (Beta), and three methods of individual examination—the Stanford-Binet Scale, the Yerkes-Bridges Point Scale, and a Performance Scale. Approximately 70 per cent. of an average draft receive their grades on Alpha, 25 per cent. on Beta, and 5 per cent. on an individual examination. Of those individually examined somewhat less than half take the Stanford-Binet, about one fourth the Point Scale, and the remainder the Performance Scale.

The group examination for literate men has proved especially successful. It satisfies reasonably well all the criteria of a good scale. It yields a score whose P.E. is only one eighth of the standard deviation found for unselected recruits. Its reliability coefficient

is about .95. It correlates about .60 with officers' ratings of men; .80 to .90 with Stanford-Binet; .80 with the Beta test for illiterates; .94 with composite score of Alpha, Beta, and Stanford-Binet; .60 to .75 with teachers' ratings of school children; .75 with Trabue Band C Completion Tests; and .80 to .90 with grade location of school children of a given age. It measures well from fourth grade ability up, and if given to the public will prove extremely useful in the grading of school children. It has been rendered relatively coach proof by the preparation of five "forms," almost equally difficult, alike psychologically, but non-duplicative in content. The Alpha test can be given and scored by any intelligent person, as the procedure is rigidly defined and the scoring is done by stencils.

The first method of group examination used for illiterates was the Stenquist Skill Test. Because of its inferior value as a measure of general intelligence it had to be abandoned. It was succeeded by the Beta test, which was the result of extensive experimentation in Camps Devens, Lee and Dix. It is a pencil and paper test, the instructions are given by pantomime, and the scoring is by stencils. As a measure of general intelligence it is good, but on the whole slightly inferior to Alpha. It has given a fairly satisfactory measure, however, of hundreds of thousands of soldiers who were not sufficiently literate to take the Alpha test. It correlates .80 with Alpha, .73 with Stanford-Binet, and about .50 to .60 with officers' ratings of men.

The methods originally prepared for the individual examination of recruits included twenty separate tests. Although most of these were individually satisfactory they were little used because of lack of comparative norms and because they were not systematized into a scale. The Stanford-Binet, the Point Scale, and the Performance Scale which succeeded them have been abbreviated so that a majority of individual examinations can be given in fifteen minutes. Each of these abbreviations correlates .90 to .95 with the complete scale of which it is a part. The individual examinations have been made largely by enlisted men of limited psychological training, working under the direction of an experienced clinical psychologist.

The unexpected close of the war prevented a revision of Beta and the preparation of a new scale for testing officers.

*The Selection and Training of Telegraphers.* L. L. THURSTONE,  
Carnegie Institute of Technology.

When the Carnegie Institute of Technology started a night course in telegraphy for drafted men of Class IA arrangements were made by which mental tests were given to the candidates at the time of their physical examinations. These tests included analogies, opposites, spelling, language completion, number completion, and a special ability test by which the candidate was asked to recognize a series of rhythms of varying difficulty. The general intelligence tests were given by the time limit method to groups of about fifty at a time. The Rhythm test was given at the same time. Each candidate was given a blank on which he was asked to reproduce the dots and dashes which were sounded by the examiner on a buzzer. The rhythm patterns were given in their order of difficulty, beginning with such simple patterns as dot-dash and terminating the test with more complex symbols such as dot-dot-dot-dash-dash-dot-dash-dash-dot. The number of errors in the list of thirty-five sound patterns constituted the candidate's score and these were subsequently correlated with his performance in sending and receiving the telegraphic code.

A speed test in receiving was given all the classes at every session. In order to obtain the candidate's most representative speed for the evening the receiving test was divided into five parts which were given at different speeds. After one hundred hours of practice the highest speed attained by each candidate was correlated with his scores in the general intelligence tests and the rhythm test. It was quite interesting to note that the highest correlation coefficient (Pearson .49) was obtained with the Rhythm test and that the Opposites test was second in diagnostic value with a corresponding coefficient of + 0.42. When the tests were combined by the method of multiple correlation the total coefficient,  $R$ , was found to be .53. In other words, the prediction obtained by the Rhythm test was noticeably raised by the addition of the intelligence tests.

The age and general schooling and occupation of the candidates were also checked up with their subsequent performance in telegraphy and it is of some practical value to know that both age and years of schooling have zero correlations with ability to learn telegraphy. The occupational classification can not be treated as a continuous variable and hence no coefficient could be calculated for it, but inspection of the occupational classification shows that

previous occupation has nothing to do with ability to learn telegraphy. The few candidates who had not finished the sixth grade were all below the average in telegraphy but the coefficient for age for the whole group is zero.

It seems apparent that the ability to learn telegraphy is a special ability. This conclusion is verified by the fact that the frequency surface of speed in telegraphy after one hundred hours of practice is significantly bi-modal, a condition which is quite unusual in mental test work with random samplings. The Rhythm test has a higher diagnostic value than the general intelligence tests and age and general schooling.

*Examination of Emotional Fitness for Warfare.* R. S. WOODWORTH,  
Columbia University.

In the hope of providing a means of quickly sifting out from the draft and holding for individual examination at the hands of the neuropsychiatrist, those of neurotic tendencies, a questionnaire was made up from symptoms believed to indicate such tendencies. When a given symptom was reported by twenty-five per cent. or more of an unselected group, it was eliminated as not being sufficiently diagnostic. After several preliminary try-outs, the most important on draft men at Camp Upton, a list of about a hundred questions was adopted. Qualitatively, such a list of questions can be used to furnish clews to be followed up by oral questions. Quantitatively, the plan is to score one against the subject for each symptom reported, and to base the question of further examination on the total score, the idea being that, while any single "symptom" (of the minor sort here in question) appears in a proportion of normal persons, the accumulation of may such symptoms is a sign of difficulty in adaptation and significant enough to warrant examining the subject with more than the usual attention. As a matter of fact, where the average college student reports about ten out of the hundred symptoms inquired about, the average neurasthenic or hysterical recognized at Camp Upton scored over forty. At the Plattsburgh reconstruction hospital, returned "shell shock" cases with the same diagnoses scored about thirty on the average.

This work was done under the direction of a committee of the American Psychological Association and later under that of a subcommittee of the Psychology Committee of the National Research Council. Of individuals contributing to the work, mention should be made of Captain A. T. Poffenberger, who with the writer

made the start, and of Captains E. G. Boring and H. L. Hollingsworth, co-members with the writer of the subcommittee last referred to.

*The Work of the Psychology Committee of the National Research Council and the Division of Psychology, Surgeon General's During 1918.* ROBERT M. YERKES, University of Minnesota.

The Psychology Committee of the Research Council appointed in April, 1917, has served the military establishments of the country as a war organization chiefly through subcommittees and conferences. Thus it has rendered important service to various departments of army and navy.

The lines of psychological service conducted for the Department of the Adjutant General have been controlled by the Committee on Classification of Personnel in the Army. For this conspicuously important service the Psychology Committee is only remotely and indirectly responsible.

Through a sub-committee and individuals, assistance was given the Department of Military Aéronautics in the selection, classification and placement of men as well as in the development of special tests.

In the Medical Department a Division of Psychology was organized as a result of Research Council activities. This division directed the examination of more than seventeen hundred thousand soldiers. Of these, more than eighty-two thousand were individually examined. Practical applications of psychology within this department are numerous and, like those of the Personnel Committee, significant in connection with increase of military efficiency.

The Morale Branch of the General Staff, recently established, is indirectly the result of work of individuals and subcommittees of the National Research Council. At times as many as twenty-five psychologists have been engaged in practical morale work for the army.

By special request of the Division of Military Intelligence, methods were prepared for the selection and training of scouts and observers. Varied assistance was rendered this Division by psychologists on duty in army training camps.

For the Committee on Education and Special Training of the War Department the Psychology Committee adapted courses of instruction to be used in Students' Army Training Corps institutions. The army tests of intelligence were also adapted with the

expectation that they would be used to assist in the selection and classification of students and for the guidance of teachers in connection with instruction.

The Chemical Warfare Service was aided by the Committee in perfecting the gas mask. It is understood that the latest improved type of mask embodies the principal recommendations of the psychologists who worked on this subject.

To the Navy, psychological service was rendered in connection with the selection and training of gunners, the testing of men for distribution or assignment in the gun-fire squad, the selection and training of listeners and of lookouts. In each of these several directions psychological contributions promise to be of far-reaching value to the Navy.

In addition to the lines of service enumerated above, the Committee directed numerous special studies of acoustic problems of military significance, of problems of emotional instability and unfitness for warfare, of problems—educational and psychological—presented by the procedures of military training and discipline, of problems of morale and of varied problems in mental and physical reeducation or rehabilitation.

Finally, it has been one of the important functions of the Psychology Committee to consider ways in which the science of psychology and its technological developments may most surely be advanced. Efforts are being made to secure wise provision for this science in connection with the permanent organization of the National Research Council.

The war work of the Psychology Committee has been greatly appreciated by the other divisions of the Research Council and the coöperative relations established between psychology and the other sciences represented in the Council are invaluable.

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